Analog and Hybrid Services

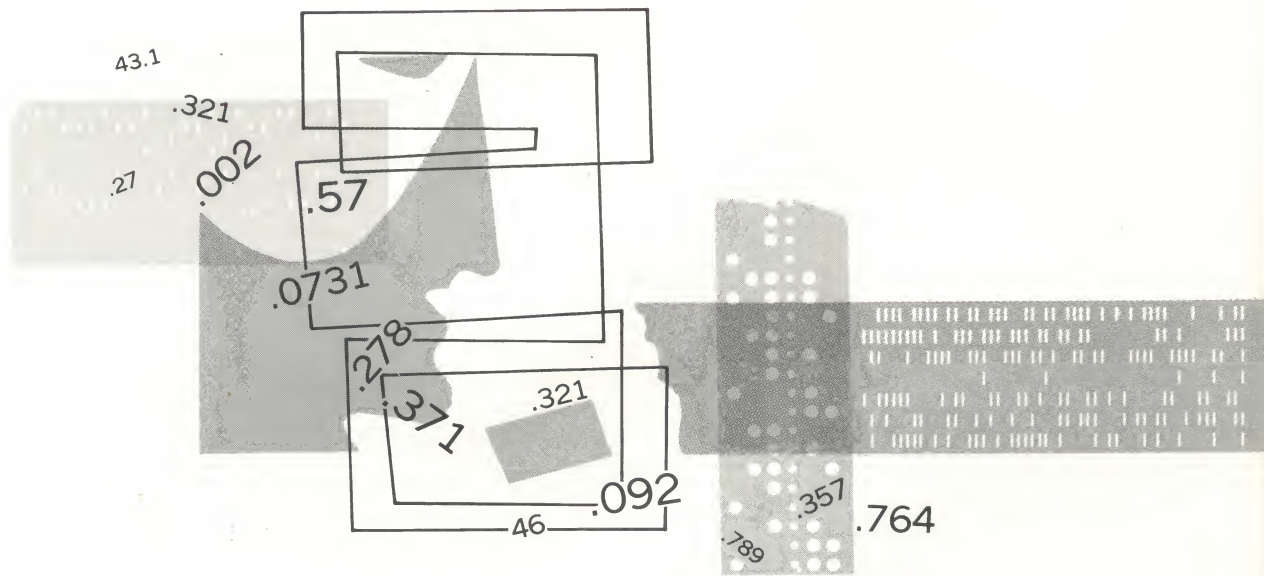43.1

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ANALOG COMPUTATION
SERVES MODERN BUSINESS
and INDUSTRY through

- *Simulations*
- *Servo Mechanisms*
- *Operations Research*
- *Statistical Analysis*
- *Control Systems Analysis*

Today, more than ever before, science and industry are demanding solutions to complex technical problems which require the use of high speed electronic computing equipment and the services of experienced computer personnel. Management has learned that by applying servo techniques it is possible to analyze such problems with analog or hybrid methods. Analog and hybrid computation are among the fastest and most economical methods available for the analysis or simulation of automated systems. Through simulation, it is possible to give management an insight into the physical operations of a system which is often unattainable in any other way.

Analog computer solutions are only as good as the people or programs that control them. Consequently, experienced people must be available to program such problems, and advanced computational techniques must be applied to solve them. Even then, the investigation of most problems is only as successful as the analysis of the results. A proper analysis requires that the results be clearly presented and easily understood.

Such experienced people, advanced techniques, and latest computation equipment are available in the McDonnell Automation Center's complete consulting and computing service center. The Automation Center's policy of continuing research in the areas of advanced techniques and wider computer applications assures its clients of fast and economical solutions.

The McDonnell Automation Center is located at the Lambert-St. Louis Municipal Airport. It is as convenient as your nearest airport, and ramp facilities at the Automation Center are available for your company airplane.

CONSULTING. The McDonnell Automation Center's staff of consultants keeps abreast of the constant technical advances being made in the computer field, and studies the latest electronic computation techniques. Because of this, Automation Center consultants can formulate the most efficient programming applications, computational techniques, and methods of analysis. Its clients have the advantage of as many of these services as necessary to satisfy their needs. Automation Center consultants are prepared to discuss your requirements and recommend the best computer program and methods for solving and analyzing your problems.

PROGRAMMING. The McDonnell Automation Center offers comprehensive experience and knowledge in the most advanced analog and hybrid techniques. This background assures you that the most accurate and economical techniques will be applied to the solution of your problems. If special knowledge in a scientific or technical field is required, the Automation Center can draw upon the varied qualifications of engineers and specialists in the other divisions of McDonnell. Automation Center personnel can formulate a program from basic problem data or assist client personnel in formulating it at their facilities or at the Automation Center in St. Louis.

COMPUTATION AND SIMULATION. The McDonnell Automation Center has available for immediate use both direct and indirect (electronic differential analyzer) analog computers, as well as facilities for hybrid computation, utilizing a HYDAC computer or General Purpose Digital Computer with a conversion link. It also has facilities for preparing special purpose hydraulic, pneumatic, and electronic hardware for simulation studies. The Automation Center has produced such special purpose computing and simulator equipment as a digital translator, a radar simulator for low altitude radar, and various control system breadboards for specialized applications.

ANALYSIS. The McDonnell Automation Center has facilities for the automatic reduction of the data obtained during computer studies and for presenting the data in a form that will facilitate the rapid interpretation of results. The Automation Center is prepared to conduct an analysis of the results of client computer programs, make recommendations as to what further action would be required, or assist client personnel in performing this analysis. If additional work is required, the Center will recommend the proper programs to be conducted.

MCDONNELL AUTOMATION CENTER ANALOG AND HYBRID COMPUTING FACILITY

The McDonnell Automation Center has one of the most powerful and comprehensive analog and hybrid computing facilities in the country. This facility, which includes active and passive analog computers, digital computers, programmed logic systems, and digital-analog linkage equipment, permits the set-up and operation of large complex analog and hybrid studies.

The following is a partial list of the design, analysis, and simulation studies which the McDonnell Automation Center has performed on its analog and hybrid equipment:

Production Scheduling

Missile Control Systems Analysis

Turbine Motor-Generator System Analysis

Hybrid Data Reduction

Structural Dynamics Analysis

Aerodynamic Analysis

Flutter and Vibration Analysis

Guidance Control System Analysis

Hybrid Simulation, including
Man-in-the-Loop Studies

Thermodynamic Studies

Production Process Development

Personnel

Experience

Equipment

The McDonnell Automation Center has a large staff of experienced consultants, systems analysts, programmers, and data processing specialists. Our services have been employed by clients of every size in many industries throughout the United States. The Center's creative and analytical capabilities are based on over two decades of data processing experience. The multi-million dollar inventory of computing and data handling equipment available for client use ranges from punched card processors and small calculators to giant digital and analog computers. The McDonnell Automation Center has the personnel, experience, and equipment to solve your technical and administrative problems.

Applications *(Administrative)*

Accounting
Manufacturing
MICR Demand Deposit Accounting
Grade Reporting
School Scheduling
Payroll
Statistical Analysis
Advertising Research

Applications *(Scientific)*

Mathematical Programming
Numerical Control
Reliability Studies
Test Data Reduction
Stress Analysis
Linear Programming
Trajectories
Circuit Design and Analysis
Operations Research
Stochastic Simulation
Network Analysis
Framed Structures Analysis
Piping Flexibility Analysis
Load Flow Analysis

Industries

Accounting, Auditing, & Bookkeeping
Aerospace
Wholesale & Retail
Chemical
Metal Fabricating
Construction
Data Processing
Finance
Government
Manufacturing
Insurance
Education
Real Estate
Transportation
Investment & Brokerage
Publishing
Petroleum
Public Utilities

MCDONNELL AUTOMATION CENTER

BOX 516 ST. LOUIS MISSOURI 63166
Tel . 731-2121   Area Code   314

Colorado Office: **DELCOS INC.** Denver – Tel. (303) 534-6291
Texas Office: **MACTEX** Houston – Tel. (713) 224-5921